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09/406,368	09/28/1999	FREDERICK M. DISCENZO	99RE067	1531
7590	01/11/2005		EXAMINER	LEE, HWA S
JOHN J HORN ALLEN-BRADLEY COMPANY INC PATENT DEPT 704P FLOOR 8 T-29 1201 SOUTH SECOND STREET MILWAUKEE, WI 53204			ART UNIT	PAPER NUMBER
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09/406,368

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/406,368
Filing Date: September 28, 1999
Appellant(s): DISCENZO, FREDERICK M.

GROUP 2800

JAN 11 2005

MAILED

Himansu S. Amin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/12/04.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Invention*

The summary of invention contained in the brief is correct.

(6) *Issues*

The appellant's statement of the issues in the brief is correct.

(7) *ClaimsAppealed*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) *Prior Art of Record*

4,471,659 Udd *et al.* 9-1984

(9) *Grounds of Rejection*

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

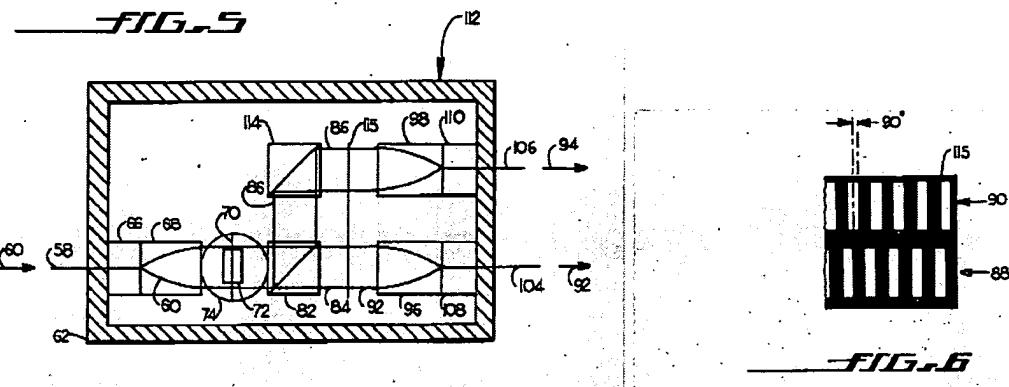
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 33-38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Udd et al (US 4,471,659).

Udd et al (Udd hereinafter) shows an optical vibration sensor comprising:

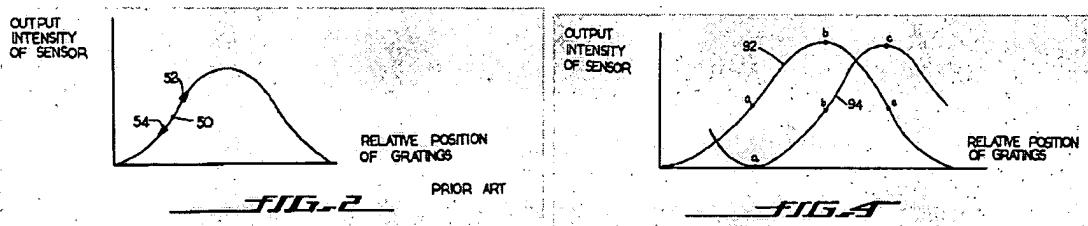
a light receiver (188) that receives light from a source;

an obscuring body (70) that based on a particular vibration state of a machine (184) obscures a portion of light transmitted from the source to the receiver.



Udd does not expressly show a processor analyzes an amount of light received by the light receiver to determine the particular vibration state. Udd however, teaches that a suitable electric processing means is used for quadrature detection (column 4, lines 51+). Udd also teaches that with quadrature detection, a wide range of vibration frequencies and amplitude is determined. Therefore, it would be obvious to one of ordinary skill in the art that the processor that determines quadrature also determines a particular vibration state.

For claims 34 and 35, Figures 2 and 4 show that the amount of light received by the light receiver increases with increased vibration state or that the amount of light received by the light receiver decreases with increased vibration state.



For claim 36, the obscuring body is a light modulating system since the obscuring body is a grating that blocks or transmits light.

For **claim 37**, the light modulating system includes a housing (112) with a first opening (hole in housing for fiber 58) that receives a light beam, a second opening (hole in housing for fiber 104 or 106) that allows passage of a light beam to the light receiver as a function of vibration state of the machine.

For **claim 38**, Udd shows the light modulating system is attached to a machine (184).

4. **Claims 41- 51** are rejected under 35 U.S.C. 103(a) as being unpatentable over Udd.

For **claims 41, 42, 49 and 51**, Udd shows an optical vibration sensor comprising:

a light receiver (96, 98) that receives light from a source;
an obscuring body (70) that based on a particular vibration state of a machine (184) obscures a portion of light transmitted from the source to the receiver.

Udd does not expressly show a processor analyzes an amount of light received by the light receiver to determine the particular vibration state. Udd however, teaches that a suitable electric processing means is used for quadrature detection (column 4, lines 51+). Udd also teaches that with quadrature detection, a wide range of vibration frequencies and amplitude is determined (Abstract). Therefore, it would be obvious to one of ordinary skill in the art that the processor that determines quadrature also determines a particular vibration state such as frequency and amplitude.

For **claim 41**, the area illuminated on lens 96 and lens 98 determines the intensity of the light received by the detector which in turn indicates vibration.

For **claim 42**, the obscuring body casts a shadow fringe upon the light receiving arrangement (93, 98, 188) and the remaining light illuminates part or all of the light receiving arrangement as a function of the particular vibration level as can be seen in Figure 4.

For **claim 43**, Udd shows a reflector (114) that reflects the remaining light onto the light receiving arrangement.

For **claim 44**, the processor would analyze the area of the light receiving arrangement (96, 98) that is illuminated via the remaining light to determine the particular vibration level of the machine since the total area illuminated on lens 96 and 98 is indicative of the intensity measured by the detector.

For **claim 45**, since the processor analyzes the area illuminated, one of ordinary skill in the art would recognize that the processor would also be analyzing the area not illuminated since the intensity measured by the detector indicates how much is illuminated versus how much is not illuminated.

For **claims 46 and 50**, the obscuring body is a light modulating system since the obscuring body is a grating that blocks or transmits light.

For **claim 47**, Udd shows the light modulating system is attached to a machine (184).

For **claim 48**, the shadow fringe turns to a complete shadow when the machine reaches a specific vibration level as can be seen in Figure 4.

(10) Response to Argument

The Office submits that claims 33-38 and 41-51 are obvious in view of Udd *et al.*

The Appellant argues that Udd *et al.* fails to teach or suggest *a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state.*

The Office respectfully disagrees. The Office believes the language of “*a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state,*” is broad enough such that Udd *et al.* reads on a reasonable interpretation of the claimed recitation.

Udd *et al.* state in column 4, lines 48-53:

“*These beams are imaged by the lens 120 onto a split inline detector 188 which converts the intensity thereof into electrical signals 190 and 192 on signal lines 194 and 196.*

The signals 190 and 192 are transmitted to suitable electronic processing means for quadrature detection of the seismic signal.”

The Office submits that the teaching of Udd *et al.* meets said claimed recitation as follows:

- a) the electronic processing means of Udd *et al.* reads on the claimed “processor that analyses”
- b) the (light) intensity of Udd *et al.* reads on “an amount of light”
- c) the split inline detector of Udd *et al.* reads on “the light receiver” and
- d) the detection of the seismic signal of Udd *et al.* reads on “the particular vibration state.”

The Appellant presents on the last full paragraph of page 5 that the Office conceded that Udd *et al.* fails **to teach or to suggest** “a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state.” However, the Office stated in the Final Office Action of May 20, 2004, that Udd *et al.* does not “**expressly show**” the claimed feature. It is believed by the Office that Udd *et al.* does not expressly show, but rather suggests to one of ordinary skill in the art that it would be obvious to the skilled artisan that the electronic processing means of Udd *et al.* analyzes an amount of light received by the detector to determine the particular vibration state.

The Office agrees with Appellant’s argument on page 6 that the frequency and amplitude of the vibration is not determined by Udd *et al.*, however it is maintained by the Office that Udd *et al.* teach the detection of vibration and that the detection of the existence or nonexistence of vibration meets the claimed limitation of “the particular vibration state.” The Office submits that “the particular vibration state” as claimed does not exclude the detection of the existence or nonexistence of vibration.

The Office also agrees with Appellant’s argument on page 6 that the two output signals correspond to the position of the grating. The Office submits that Udd *et al.* further go on to teach that the position of the grating ultimately corresponds to the seismic (vibration) signal where Udd *et al.* states, “The signals 190 and 192 are transmitted to suitable electronic processing means for quadrature detection of the seismic signal.”

The Appellant argues that there is no teaching, suggestion, or motivation to modify Udd *et al.*, and that the Office is using improper 20/20 hindsight for the modification (bottom of page

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6 to page 7). In response, the Office was not attempting to modify Udd *et al.*, but rather the Office was attempting to show that, although Udd *et al.* does not expressly state the claimed limitation of, "*a processor that analyzes an amount of light received by the light receiver to determine the particular vibration state,*" the teachings of Udd *et al.* clearly suggests to one of ordinary skill in the art that the "suitable electronic means" of Udd *et al.* meets a reasonable interpretation of the limitations as presently claimed.

In response to Appellant's argument of the rejection of claims 41-51 under 35 U.S.C. 103(a), the Office believes the arguments are similar to the arguments with respect to claims 33-38, and thus have already been addressed.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

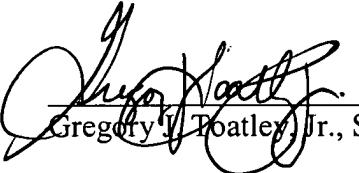


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January 7, 2005

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